

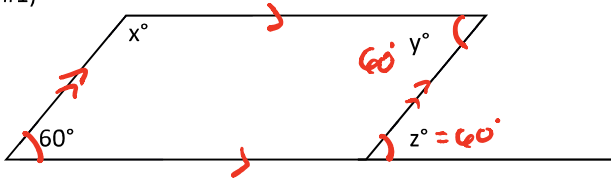
Quadrilaterals

Homework Practice Test 6 version 2

Name _____

If each quadrilateral is a parallelogram, find the value of x, y, and z.

#1)



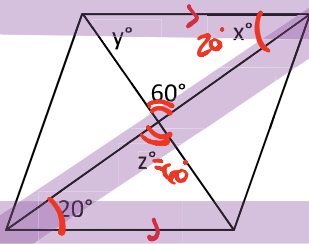
$$x + 60 = 180$$

$$x = 120$$

$$y = 60$$

$$z = 60$$

#2)



$$x = 20$$

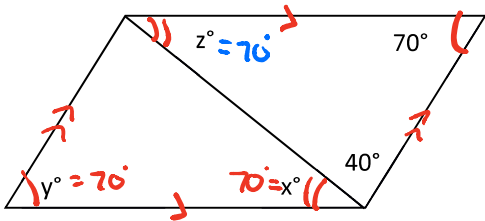
$$z = 60$$

$$y + 60 + 20 = 180$$

$$y + 80 = 180$$

$$y = 100$$

#3)



$$y = 70$$

$$x = 70$$

$$z = 70$$

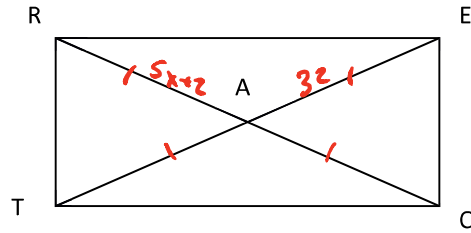
$$40 + 70 + z = 180$$

$$110 + z = 180$$

$$z = 70$$

If each quadrilateral is a rectangle, find the value of x.

#4) $RA = 5x + 2$, $AE = 32$



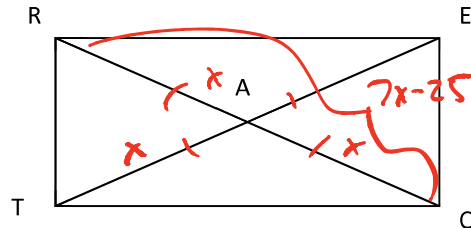
$$RA = AE$$

$$5x + 2 = 32$$

$$5x = 30$$

$$x = 6$$

#5) $TA = x$, $RC = 7x - 25$



$$RA + AC = RC$$

$$(x) + (x) = (7x - 25)$$

$$2x = 7x - 25$$

$$-5x = -25$$

$$x = 5$$

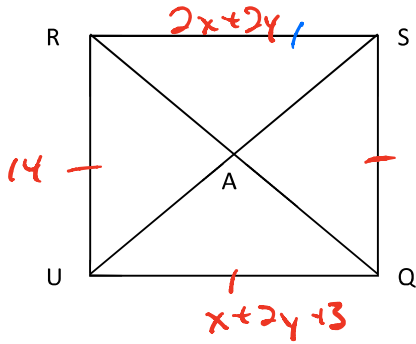
Quadrilaterals

Homework Practice Test 6 version 2

Name _____

If the quadrilateral is a square, find the value of x and y .

#6) $SR = 2x + 2y$, $UQ = x + 2y + 3$, $RU = 14$

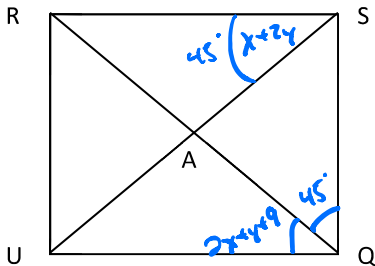


$$\begin{aligned} 2x + 2y &= 14 \\ x + 2y + 3 &= 14 \end{aligned} \rightarrow x + 2y = 11$$

$$\begin{aligned} x &= -2y + 11 \\ x &= -2(4) + 11 \\ x &= -8 + 11 \\ x &= 3 \end{aligned}$$

$$\begin{aligned} 2(-2y + 11) + 2y &= 14 \\ -4y + 22 + 2y &= 14 \\ -2y + 22 &= 14 \\ -2y &= -8 \\ y &= 4 \end{aligned}$$

#7) $m\angle RSA = x + 2y$, $m\angle AQU = 2x + y + 9$



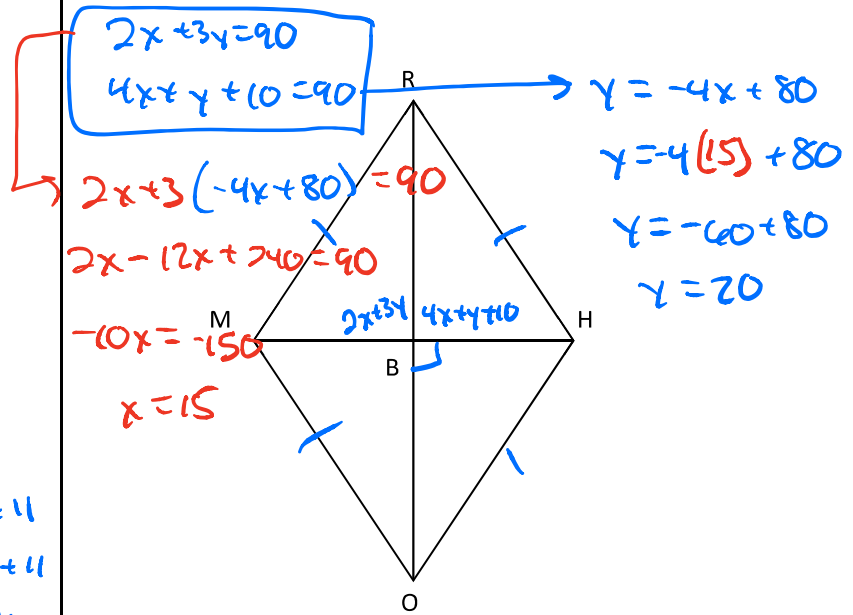
$$\begin{aligned} x + 2y &= 45 \\ 2x + y + 9 &= 45 \end{aligned} \rightarrow x = 45 - 2y$$

$$\begin{aligned} x &= 45 - 2(18) \\ x &= 45 - 36 \\ x &= 9 \end{aligned}$$

$$\begin{aligned} 2(45 - 2y) + y + 9 &= 45 \\ 90 - 4y + y + 9 &= 45 \\ -3y + 99 &= 45 \\ -3y &= -54 \\ y &= 18 \end{aligned}$$

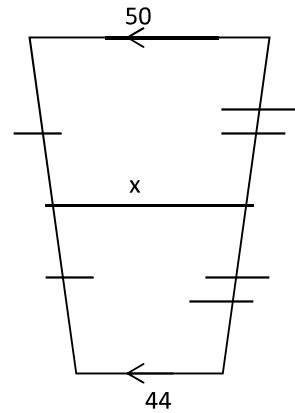
If the quadrilateral is a rhombus, find the value of x and y .

#8) $m\angle RBM = 2x + 3y$, $m\angle RBH = 4x + y + 10$



If each quadrilateral is a trapezoid, find the value of x .

#9)



$$\text{Median} = \frac{b_1 + b_2}{2}$$

$$x = \frac{(50) + (44)}{2}$$

$$x = \frac{94}{2}$$

$$x = 47$$

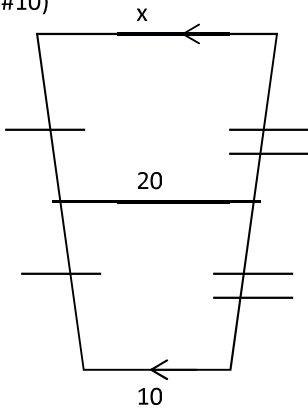
Quadrilaterals

Homework Practice Test 6 version 2

Name _____

If each quadrilateral is a trapezoid, find the value of x.

#10)



$$\text{Median} = \frac{b_1 + b_2}{2}$$

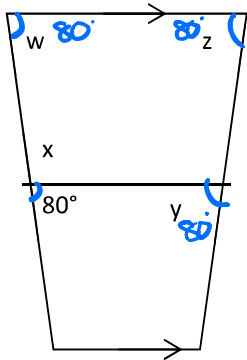
$$20 = \frac{x + (10)}{2}$$

$$40 = x + 10$$

$$30 = x$$

If the quadrilateral is an isosceles trapezoid, find the value of w, x, y, and z.

#11)



$$x + 80 = 180$$

$$x = 100$$

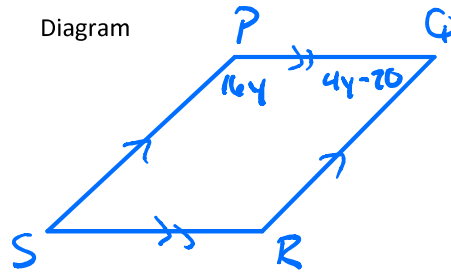
$$w = 80^\circ$$

$$z = 80^\circ$$

$$y = 80^\circ$$

#12) Given parallelogram PQRS with $m\angle P = 16y$ and $m\angle Q = 4y - 20$, find the measures of $\angle R$ and $\angle S$.

Diagram



Work

$$m\angle P + m\angle Q = 180^\circ$$

$$(16y) + (4y - 20) = 180^\circ$$

$$20y - 20 = 180$$

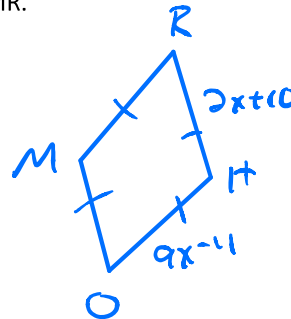
$$20y = 200$$

$$y = 10$$

$m\angle P = 16y$ $= 16(10)$ $m\angle P = 160^\circ$
$m\angle Q = 20^\circ$

#13) Given rhombus RHOM with $RH = 2x + 10$ and $HO = 9x - 11$, find MR.

Diagram



Work

$$RH = HO$$

$$2x + 10 = 9x - 11$$

$$2x + 21 = 9x$$

$$21 = 7x$$

$$3 = x$$

$$MR = 2x + 10$$

$$= 2(3) + 10$$

$$= 6 + 10$$

$$MR = 16$$

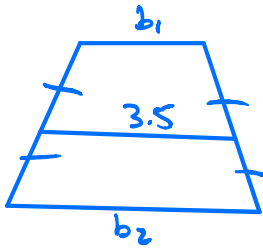
Quadrilaterals

Homework Practice Test 6 version 2

Name _____

#14) If the measure of the median of an isosceles trapezoid is 3.5, what are the possible integral measures for the bases?

Diagram



Work

$$\text{Median} = \frac{b_1 + b_2}{2}$$

$$3.5 = \frac{b_1 + b_2}{2}$$

$$7 = b_1 + b_2$$

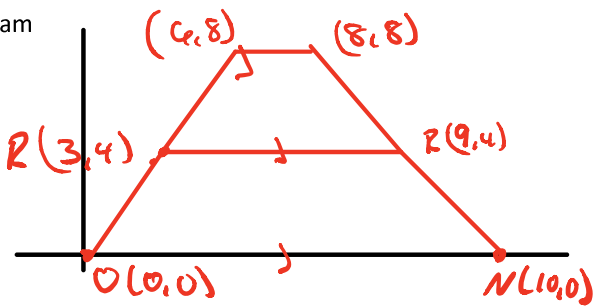
$$(b_1, b_2) = (1, 6)$$

$$= (2, 5)$$

$$= (3, 4)$$

#15) \overline{UR} is the median of a trapezoid with bases \overline{ON} and \overline{TS} . If the coordinates of the points are $U(3, 4)$, $R(9, 4)$, $O(0, 0)$, and $N(10, 0)$, find the coordinates of T and S .

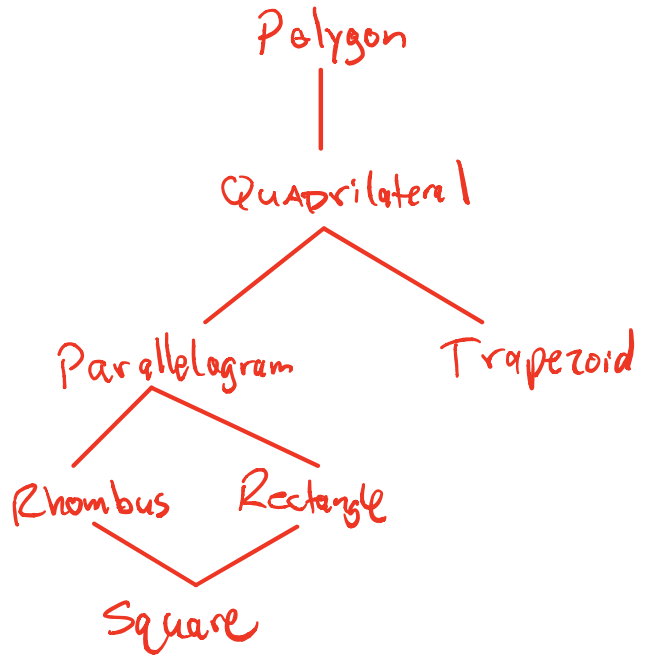
Diagram



Work

T and S are $(6, 8)$ and $(8, 8)$

#16) Draw a tree diagram using square, parallelogram, rhombus, quadrilateral, rectangle, polygon, and trapezoid. Your tree should start with the most general term and then gradually get more specific.



Quadrilaterals

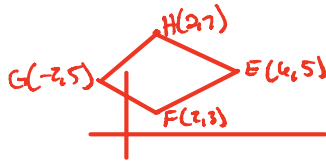
Homework Practice Test 6 version 2

Name _____

Determine whether EFGH is a parallelogram, rectangle, rhombus, or square.

List all that apply. Organize your work in a logical manner.

#17) E(6, 5), F(2, 3), G(-2, 5), H(2, 7)



Parallelogram ✓ $M_{GE} = M_{FH}$

$$M_{GE} = \left(\frac{\sum x}{2}, \frac{\sum y}{2} \right) = \left(\frac{(-2)+6}{2}, \frac{5+5}{2} \right) = \left(\frac{4}{2}, \frac{10}{2} \right) = (2, 5)$$

$$M_{FH} = \left(\frac{\sum x}{2}, \frac{\sum y}{2} \right) = \left(\frac{(-2)+2}{2}, \frac{3+7}{2} \right) = \left(\frac{0}{2}, \frac{10}{2} \right) = (0, 5)$$

~~Rectangle~~ ✗ $GE = FH$

$$GE = \sqrt{[\Delta x]^2 + [\Delta y]^2} = \sqrt{[-2-6]^2 + [5-5]^2} = \sqrt{[-8]^2 + [0]^2} = \sqrt{64+0} = \sqrt{64} = 8$$

$$FH = \sqrt{[\Delta x]^2 + [\Delta y]^2} = \sqrt{[2-2]^2 + [7-3]^2} = \sqrt{[0]^2 + [4]^2} = \sqrt{0+16} = \sqrt{16} = 4$$

Rhombus ✓ $GE \perp FH$

$$m_{GE} = \frac{\Delta y}{\Delta x} = \frac{5-5}{(-2)-6} = \frac{0}{-8} = 0$$

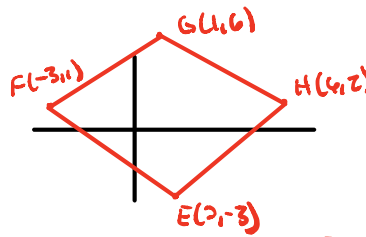
Horizontal

$$m_{FH} = \frac{\Delta y}{\Delta x} = \frac{7-3}{2-2} = \frac{4}{0} = \text{undefined}$$

vertical

Parallelogram Rectangle Rhombus Square

#18) E(2, -3), F(-3, 1), G(1, 6), H(6, 2)



Parallelogram? $M_{FH} = M_{GE}$

$M_{FH} = \left(\frac{\sum x}{2}, \frac{\sum y}{2} \right) = \left(\frac{(-3)+6}{2}, \frac{1+2}{2} \right) = \left(\frac{3}{2}, \frac{3}{2} \right)$	$M_{EG} = \left(\frac{\sum x}{2}, \frac{\sum y}{2} \right) = \left(\frac{1+6}{2}, \frac{6+(-3)}{2} \right) = \left(\frac{7}{2}, \frac{3}{2} \right)$
---	---

Rhombus? $m_{FH} \perp m_{GE}$

$m_{FH} = \frac{\Delta y}{\Delta x} = \frac{1-2}{(-3)-6} = \frac{-1}{-9} = \frac{1}{9}$	$m_{GE} = \frac{\Delta y}{\Delta x} = \frac{6-(-3)}{1-2} = \frac{9}{-1} = -9$
---	---

Rectangle? $d_{FH} = d_{GE}$

$d_{FH} = \sqrt{[\Delta x]^2 + [\Delta y]^2} = \sqrt{[-3-6]^2 + [1-2]^2} = \sqrt{[-9]^2 + [-1]^2} = \sqrt{81+1} = \sqrt{82}$	$d_{GE} = \sqrt{[\Delta x]^2 + [\Delta y]^2} = \sqrt{[1-6]^2 + [6-(-3)]^2} = \sqrt{[-5]^2 + [9]^2} = \sqrt{25+81} = \sqrt{106}$
--	---

∴

Parallelogram Rectangle Rhombus Square

Quadrilaterals

Homework Practice Test 6 version 2

Name _____

#19) What is the distance formula?

$$d = \sqrt{[\Delta x]^2 + [\Delta y]^2}$$

#20) What is the slope formula?

$$m = \frac{\Delta y}{\Delta x}$$

#21) What is the midpoint formula for the midpoint in a coordinate plane?

$$M = \left(\frac{\sum x}{2}, \frac{\sum y}{2} \right)$$